

CHANGING CLIMATE – CHANGING LAWS

WHERE DOES CLIMATE CHANGE FIT INTO PLANNING SCHEMES?

Paper presented by Wendy Bell at the Seminar held by the Environmental Defenders Office (SA) Inc on 25th June 2009

There have been numerous responses from the planning system over the last 20 years on climate change, global warming and the greenhouse effect. Aspects such as energy efficiency, flood mitigation, sea level rise and water management have been the subject of reviews of Development Plans and State planning policies. However, many more legal changes are needed and will not be effective until there is a wide reaching change in mindset of all concerned. At the state, regional and local level, changes in planning legislation and practice are required to facilitate carbon emission reduction and renewable energy production, mitigate against the effects of reduced rainfall, facilitate water use and re-use, adapt to sea level rise and flooding, treasure surface and ground water sources and reserves, adapt to temperature rise and finally conserve and enhance biodiversity.

Nationally the Planning Institute of Australia (PIA) the professional body supporting the planning profession has delivered training seminars to planning practitioners in all states and territories on the impacts of climate change (PIA 2007¹). PIA has also prepared a Policy Position Statement on Climate Change (PIA 2007²) which outlines key strategies for abatement or mitigation of greenhouse gas emissions and adaptation to climate change. Concurrently the then Planning SA initiated the Better Development Plan (BDP) process which sought to standardise the structure and basic content of Development Plan. There is now a State Planning Policy Library including sections on ‘energy efficiency’ and ‘natural resource management’, for the voluntary adoption by local governments in South Australia. This has resulted in many additions to Developments Plans to include such topics. However, the Planning Minister has been reluctant to mandate such changes as they have for others such as Bushfire Protection in past. There is an opportunity to expand and enhance the BDP policies as they relate to climate change and related natural resource management and energy efficiency provisions and a need for Ministerial mandating of these provisions into local government Development Plans as a matter of urgency.

The latest version of the State Strategic Plan³(SASP [\climate change\South Australia's Strategic Plan - The Plan.mht](#)) reveals some omissions which impedes climate change mitigation, which will be referred to in more detail under energy efficiency and water sensitive urban design addressed later in this paper.

Planning law is embodied in the Development Act (1993) and associated Development Regulations (1993) which are applied in the form of Planning Strategies at the state level, Regional Land Use Frameworks as volumes of the Planning Strategy at the regional level and Development Plans containing policies against which development is assessed at the local level.

¹ PIA National Office, June 2007, *Final Report, the Delivery of Training Seminars to Planning Practitioners on the Impacts of Climate Change.*

² PIA SA Division February 2007, *Climate Change Policy Position Statement*

³ SA Government, January 2007, *SA Strategic Plan*

At the state level, the Development Act requires integration of planning legislation and its policies with other related government legislation including the SASP, the Natural Resource Management (NRM) Act, the Heritage Act, the Local Government Act, the River Murray Act, the Native Vegetation Act and more recently the Climate Change Act.

This forms an excellent foundation on which to achieve mitigation of climate change impacts and adaptation through planning legislation and associated policies. However there are opportunities for improvement in State Government support for the enforcement and enhancement of planning policy, if climate change impacts are to be adequately addressed through the planning system. These may be constrained if the State Government's planning reforms⁴ continue to be largely driven by the Economic Development sector to the exclusion its own government arm of planning and the planning profession in the formative stages of the Planning Review. The lack of engagement of the profession is still reflected in the membership of its Steering Committee. The exclusion of essential developments such as new housing from the energy efficiency provisions of the SASP and from the content of the new Residential Development Code⁵ will also constrain the energy efficiency new dwellings and additions to existing dwellings.

Regional Land Use Frameworks are an important part of planning legislation but require more strategies for implementation in the state's regions which are typically lacking in planning professional resources and regional networks for integration.

Local governments have progressed considerably in adopting planning policies relating to the key issues of climate change but are thwarted in their application of these carefully developed policies by being bypassed by the gazettal of a fast-tracking means of approval facilitated by the new Residential Development Code.

Local and State Government planning authorities have not been as uniformly committed to applying climate change related provisions as they are to applying car parking, setback and other quantitative provisions. The planning profession and government agencies should not defer a commitment to the application of climate change legislation and policy pending the availability of more facts and information. The urgency of this problem will increase if we wait for a full range of data and its analysis.

The facts are clear as revealed by the Garnaut Report⁶ in the statement that 'the largest source of increasing urgency for mitigation against climate changes is the unexpectedly high energy intensity of economic growth and reliance on fossil fuels as sources of energy'.

Each aspect of the climate change as it relates to planning legislation and policy is explored in this paper, some facts are provided, progress outlined, leading international examples given where appropriate and required actions summarised.

⁴ Government of South Australia 2008, *Better Planning Better Future Planning Reforms 2008*.

⁵ Government of South Australia 2008, *Guide to the Residential Development Code*.

⁶ Garnaut February 2008, *Garnaut Climate Change Review Interim Report to the Commonwealth, State and Territory Governments of Australia (Executive Summary)*.

Carbon Reduction and Renewable Energy production is informed by very clear and disturbing facts including, the finding that half our ecological footprint can be attributed to the production and use of energy. Housing and transport are responsible for 28% of the State's ecological footprint, of which 18% relates to housing and 10% to mobility. Energy in housing alone comprises 15% of the State's ecological footprint (State of Environment (SOE) 2008⁷) and heating and cooling account for 30% of all household energy use. These illustrate the urgency to increase housing energy efficiency.

These statistics have profound implications for planning policies relating to transport and mobility and the energy efficiency of buildings, particularly housing. With a forecast requirement for an additional new housing stock of over 8,000 new dwellings per year and a total of 250,000 to the year 2036 urgent application of energy efficient principles is required if targets for carbon reduction are to be achieved. Many Development Plans include provisions relating to the energy efficiency of residential land division. Other policies cover the design and orientation of dwellings to maximise winter solar access and reduce the impact of heat load in summer. Such provisions are excluded from the new Residential Development Code, which has prompted the formation of a new network of planners. The Planning Reference Group comprising an independent group of leading members of the profession which has drafted an amendment to this Code for consideration by the Minister. A corresponding change to the SASP to include new dwellings in the energy efficiency target T3.14 will also be pursued by this group.

The Planning Reference Group has found (pers.comm with Minister Holloway) that there is an acknowledgement of the ineffectiveness of the Building Code of Australia (BCA) 5-star efficiency rating for new housing in achieving energy efficiency in new dwellings. Research by leading South Australian academic Professor Terry Williamson⁸ has shown how regressive this rating is in achieving energy efficiency in residential buildings. He points out that 'in January 2007 the stringency of the BCA provisions was increased and the second generation rating tool AccuRate was introduced. There is however little evidence to support the usefulness of the regulations in meeting the objective "to reduce greenhouse gas emissions by efficiently using energy"'. This highlights the need to have planning policies to facilitate energy efficiency.

The State Government has indicated that it is relying on the application of land division policies and an increase to 7.5 stars to achieve reasonable targets of energy efficiency but in the likely lengthy period taken to implement such a change to the BCA, thousands of new homes and additions will have been approved through the new Residential Code with no requirements for energy efficiency such as the orientation of living room windows and the shading of northern and western windows. Land division policies affecting dwelling energy efficiency such as allotment orientation will also require improvement and mandating by the Minister if new development areas, urban renewal areas are to incorporate such features.

⁷ Environment Protection Authority November 2008, *The State of our Environment State of Environment Report for South Australia 2008*'.

⁸ Williamson, T., et al, *An Evaluation of the Nationwide House Energy Rating Scheme (NatHERS)*.

One of the likely outcomes of the impending 30-Year Plan for Metropolitan Adelaide will be an increase in urban housing density in the form of Transit Oriented Developments or TODs (Boswell, 2009⁹). Such increases in urban densities have been the aim of Planning Legislation since the early 1990s and even earlier when urban consolidation was promoted around Australia. This has gradually resulted in an increase in medium density housing within urban areas. The demand for inner city living in Adelaide has led to a dramatic increase in high density housing in recent years partly in response to the increased demand for student housing. However, such housing is not required to comply with strict energy efficiency requirements.

The heat island effect arising from urban and inner city residential developments will require new measures to ensure that the recent loss of vegetation in urban areas arising from an unexpectedly dramatic increase in typical dwelling size, does not perpetuate the greater dependency on air-conditioning and therefore energy use in such developments. Recent research into the reviews of planning in other states (Bunker 2008¹⁰) has pointed to the lack of investigation into the environmental impacts of such developments. Bunker points out that ‘overarching these concerns is the issue of climate change, with increasing evidence that Australia is likely to be affected considerably in this process. Although these challenges are beginning to be appreciated and addressed, there has been little engagement on the part of the metropolitan strategies with these issues’.

In another recent analysis of Capital City Planning Strategies (Randolph 2008¹¹) states that ‘urban town and neighbourhood centres and primary transport corridors are going to be focus for this activity, promising a very different future for Australian city dwellers. However, there is evidence that building standards in some sections of the market are being pushed down in the pursuit of profitable development opportunities, especially in lower value locations’ and Randolph goes on to say that ‘worryingly, current metropolitan strategy plans for urban renewal and consolidation can only succeed if large quantities of strata housing are delivered in such locations’. There is no SA planning policy specifically relating to the energy efficiency of medium to high density housing and the significant proportion of the new 250,000 new dwellings expected to occur in established areas in the next 30 years, should be subject to planning policies for energy efficiency, although this will have to be balanced with the need to achieve affordable housing if such developments are to be attractive to a wide market.

Planning reform in South Australia has included an initiative to promote wind farms as one source of renewable energy through Department of Planning and Local Government SA providing a package under the Development Act to assist Councils and proponents in the planning and development of Wind Farms (Planning SA 2002¹²). The package provides information to support local government policy makers when seeking to amend Development Plans and assist proponents in considering the needs of local communities when choosing wind farm locations. This is a positive feature of planning legislation and policy development.

⁹ Boswell, L, 2009

¹⁰ Bunker, R., July 2008 City Futures Research Centre Research Paper No. 9

¹¹ Randolph, Prof B, July 2008 *Delivering the Compact City in Australia: Current trends and future implications*, City Future Research Centre University of NSW.

¹² Planning SA 2002, *Development Act (1993) Guide for Applicants Wind Farms*.

Other means of reducing carbon emissions is by increasing vegetation in cities with the added benefit of reducing the heat island effect which will be compounded by the expected increase in temperatures. The importance of landscaping including native vegetation in new developments has been included local government Development Plans in recent years. The need for carbon reduction now makes this more urgent to achieve. In the experience of the author, rarely is new landscaping given the same attention as quantitative provisions relating to car parking and setbacks, but rather is usually included as a condition of development approval subject to the satisfaction of the Development Planner assessing the application. Planners do not have the expertise to assess whether species of planting are native or suitable for particular sites and the need to consult qualified horticulturists, arborists and landscape architects should be given the same weight for such assessments as investigations into the value of significant trees. The loss of vegetation has been further exacerbated by the increase in dwelling sizes and the corresponding reduction in site sizes. This requires further investigation if vegetation cover is to be increased in urban areas and local governments should give greater attention to the inclusion of landscaping plans in accordance with Development Plan provisions at the time of lodgment rather than as a condition of development approval.

*In conclusion planners will play a key role in meeting **carbon reduction and renewable energy** targets of the SASP and 30-Year Plan for Metropolitan Adelaide and will need to build their knowledge base, work in collaboration with other sectors and focus on design, layout and density in reducing the effect of climate change. There are opportunities to explore initiatives common in Europe where district heating systems, carbon capture and storage and improved energy performance in buildings is common. Green energy planning should be promoted in the master planning of new development areas likely to be identified in the 30-Year Plan to ensure energy strategies are considered early. Good examples such as Lochiel Park should become mainstream. This will require new planning policies, negotiated agreements with, and the cooperation of, the development and building sectors.*

With transport responsible for 28% of the State's ecological footprint, the anticipated focus of the proposed 30-Plan for Adelaide is reduced car use by increasing the quality and frequency of public transport and locating higher density housing in TODs close to rail and bus interchanges. The Garnaut Report Papers¹³ confirm that transport is a major contributor of greenhouse gas in Australia and suggests that 'low-emissions technologies and practices in transport, land use and buildings are interlinked...' and ...'urban form and land use planning' is a potential barrier 'that may impede the cost-effective, low emission options in passenger transport'. The report goes on to say however that 'some researchers suggest that it may be possible for lower density areas to support low emission transport patterns'. It refers to research by Mees (2005) that suggests that improving infrastructure and services for all modes of transport including cycling and walking can result in a reduction in emissions even in low-density areas. This points to the need for planning policy to include a greater emphasis on cycling and pedestrian movement with neighbourhood planning identifying networks of such routes linked to public transport options.

Coordinated strategies to reduce emissions from transport will contribute to climate change mitigation. In this climate of economic growth, low density areas as well as TODs and urban regeneration will mean that the planning system is a primary means of balancing these pressures. There is a potential role for planners in facilitating such infrastructure provision in all urban areas. Policy and guidelines on low-carbon modes of travel will need to focus on influencing behaviour through such means as travel plans and providing infrastructure to encourage use of more sustainable transport modes, such as cycling and

¹³ Garnaut 2008, *Issues Paper – Forum 5 Transport, Planning and the Built Environment*

walking. Planning strategies for new and renewed areas should include low-emission strategies and travel plans as part of a range of conditions and obligations. There will be a reluctance in the current political climate to place further environmental constraints on developers and such initiatives may require government incentives if the achievement of housing affordability in new developments and TODs is not to be compromised.

The reduction in rainfall is another consequence of climate change. The need to treasure, harness and conserve surface and ground water use will become paramount. In South Australia, domestic water use is understood to be in the order of 20% of total use with agriculture almost 40%, energy production 25% and commerce and industry in the order of 15%. The SOE report¹⁴ found that the average daily per capita household consumption of mains water in Adelaide Metropolitan area decreased between 2000/01 and 2005/06, the re-use of treated wastewater for horticulture and other non potable uses increased from 1995 to 2007, and the reuse of stormwater is increasing.

Notwithstanding these promising statistics, there is a need for the planning system to play a larger role in relation to water management. The state has some of the leading national water sensitive new urban development including Northgate, Northfield and most recently Lochiel Park. These developments have been largely Land Management Corporation (LMC) coordination projects and for the same standards to be applied to all new developments, local government will need to adopt similar governance approaches. Lessons can be learnt from the approaches taken in Mawson Central to achieve integrated approaches to climate change. The use of water sensitive urban design measures are promoted by the Department of Planning and Local Government which has recently developed a BDP Module on the subject.

Such water management measures are not included in the new Residential Development Code which omits requirements for water sensitive urban design, such as stormwater storage and the use of permeable surfaces, both policies which have been endorsed by many local authorities and incorporated in some Development Plans. For these measures to be more widespread, an amendment to the Code will be required as well as Ministerial mandating for the widespread incorporation of such policies in Development Plans particularly in new development areas.

With the likely increase in severity of storm events, flooding is likely to become a major issue in some parts of South Australia and the planning system plays an important role in ensuring that vulnerable areas are identified and development controls amended to require development to acknowledge these changes. Development Plans should be informed by local authorities' flood risk management strategies, including protecting functional flood plains, directing vulnerable development away from areas likely to be affected by flooding, ensuring all new development is safe, promoting the use of sustainable drainage systems and flood alleviation measures.

A recently completed NRM Comprehensive Regional Plan¹⁵ has identified the need for new development in rural areas to be linked to water availability. They have also recommended associated reviews of Council Development Plans¹⁶ as 'water availability is an issue and is not addressed well by Development Plans despite an increase in numbers of new dwellings'. It goes on to conclude that 'there is a lack of Development Plan provisions that promote the fair sharing of water resources.....' and can create

¹⁴ EPA 2008, *The State of our Environment Report for South Australia*, p252.

¹⁵ Eyre Peninsula NRM Board, 2009, *Comprehensive NRM Plan for the Eyre Peninsula*.

¹⁶ URPS, 2008, *Review of Council Development Plans and relevant Strategies and Policies as Input to the Eyre Peninsula Regional NRM Plan*.

significant issues for development relying on underground water. Such Development Plans will be amended to include provisions relating to water availability and allocation. There is a corresponding need for Stormwater Management Plans to inform Development Plans to ensure that stormwater is valued as a water resource, surface and ground water management is achieved and flood risk is minimised in new developments. There is also a need for planning policies and Development Plans to be more specific about the health and water requirements of water course and groundwater dependent eco-systems.

*A recent article by a leading Planning firm¹⁷ reports that ‘environmental scientists expect climate change to bring three major phenomena: **sea level rise**, more intense storms and variations in ocean acidity. These are complex issues and are only outlined in this paper in terms of consequences for the planning system. The above report highlights the need for ‘standards of elevation and setback of future development if excess risk is to be avoided’. However, it highlights that coastal areas vary in their vulnerability to these risks, the setting of standard setbacks or elevational standards is questionable and local standards should be based on evaluated risk. This will require state wide information on the variation in risks by identifying soft and low lying coastal areas through national data on the Australian coastline, combined with regional assessments of the likely risks. It is expected that sea level rise and variations in the impact of storm activity will have significant impacts on coastal land forms and ecosystems.*

Measures to mitigate against and adapt to this climate change impact will need to be integrated with other related coastal strategies for coastal living, coast protection, marine planning, marine park legislation and coastal development. With the increasing pressure of development on coastal areas, the complex nature of natural resource management in these areas and flexibility to enable coastal areas to respond naturally to climate change rather than the adaptation approach required in established coastal development areas. Vulnerable coastal areas where it is still possible for natural processes to take place should be identified and protected from development as a high priority. This may require new zonings in Development Plans and amendments to existing zones.

The NRM Council recently called for improved coordination between the various agencies responsible for land and water management and protection in coastal regions with integrated strategies informing regional and local planning strategies and Development Plans.

***Temperature rises** are also a well known and documented consequence of climate change and have implications for the planning system. At a regional level the production of food in agricultural areas has a greenhouse cost in its embodied energy and the expected rise in temperatures in some rural South Australia will result in the need to consider alternative areas for food production. The protection of existing valuable farming areas will become critical where there is good rainfall or access to reliable groundwater and the promotion of adaptive land uses will be accompanied by a growing need to integrate food production into urban environments.*

¹⁷ SGS Planning, October 2008, *Responding to climate change and sea level rise impacts on coastal areas*, in Urbecon.

Regional Land Use Frameworks have the potential to integrate the various strategies required to achieve some of these strategies, although new regional governance systems will be required to achieve this. Regional NRM Plans can identify where there is a risk of changing rural land uses such as viticulture which is emerging in some areas as an alternative land use, but where irrigated has consequences for water management.

At the metropolitan level, the State Government can play a role in developing policies on the potential for productive suburbs as flagged by a recent presentation at a PIA Congress¹⁸. There has been a growth in Community Gardens in NSW¹⁹ and there is a considerable potential for this and other measures such as productive use of existing open spaces in existing and new development areas if temperature increases reduce the productivity of agricultural and horticultural land. The protection of valuable agricultural land and adaptation to temperature rises will also be facilitated by the planning system with a particular need to protect viable agricultural land on urban fringes where development pressures exist. There is an opportunity for future Regional Planning structures to play a proactive role in planning for rural land uses in the face of climate change and identifying targets for land zoned for agriculture with regular reporting on trends in availability.

*Climate change also threatens **biodiversity** through temperature changes, reduced rainfall and the threat of development and amongst other factors. Planning policies can be strengthened particularly in the metropolitan, peri-urban areas and township growth areas where remnants of native vegetation are particularly vulnerable. Planning policies to enhance as well as protect existing remnant habitats should also include low value areas which have the potential to be improved. Development Plans can identify areas for creating new and enhancing and protecting existing native flora and fauna habitats in urban areas. The impending 30-Year Plan for Adelaide has the potential to strengthen existing policies to ensure that biodiversity conservation is managed for climate change.*

In conclusion, climate change is a relatively new issue for the State Government and many local governments and requires a corresponding behavioural change in the community. Planners require more guidance on climate change and related policy and need to play a more strategic and proactive role in integrating planning legislation with related legislation in order to apply the existing policies more stringently and develop and implement new policies on climate change.

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June 2009

¹⁸ Adams, R. 2009 *Melbourne Growth Strategy*, paper presented to the PIA National Congress in Darwin.

¹⁹ Bartolomei L., Corkery L., Judd B., and Thompson S., 2003 *A Bountiful Harvest: Community Gardens and Neighborhood Renewal in Waterloo*. NSW Department of Housing and the University of NSW.